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INSIDE

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Intelligent Transportation Systems Update for North America

### Ford to Offer Optional Emergency Call System On Continental in 1996

Ford, Motorola, Westinghouse collaborate on GPS-based system. Calls to be routed to Westinghouse center in Texas, then re-routed to local responders. Target price below \$700. Motorola, Westinghouse eye the aftermarket.

Ford Motor Company's Lincoln-Mercury Division will offer an emergency response system employing automatic vehicle location (AVL) as an option on the Lincoln Continental in the 1996 model year. The product, called the Lincoln Remote Emergency Satellite Cellular Unit (RESCU), is based on a unit combining global positioning system (GPS) and cellular technology that Motorola announced last year (see Inside IVHS, Dec. 5, 1994). Motorola, Ford's Automotive Components Division and the Westinghouse Communications Systems Division jointly developed the Lincoln version of the system. Ford introduced the product at the New York Auto Show earlier this month.

The system allows a motorist in distress to summon help by pressing one of two buttons located in the Continental's over-

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## HELP, UPS Fart Ways Over PrePass Transaction Fee

UPS objects to paying "tax" to use HELP's PrePass system. HELP calls the fee a voluntary charge for premium service. California carrier says company saves at least \$3.75 each time a truck bypasses a weigh station. Advantage I-75 official distinguishes between basic and value-added services.

"A matter of philosophy" lies at the heart of a decision by United Parcel Service (UPS) not to become a customer of HELP, Inc., says Kevin Sondrup, manager of automotive engineering at the Atlanta-based package carrier. HELP is the not-for-profit organization formed to develop ITS services for commercial vehicle operations (CVO), beginning on a corridor in the western U.S. UPS issued a press release earlier this month to say it won't participate in HELP's PrePass electronic clearance service because HELP is charging motor carriers a transaction fee (see **Inside IVHS**, April 10, 1995).

"The company attributes its move to HELP, Inc.'s newly adopted promotion of the 'pay for pass concept' for electronic vehicle clearance that it said will be an unfair new form of taxation," says UPS' April 5 release.

UPS is "just flat wrong" to call the transaction fee a tax, says Richard Landis, executive director of HELP in Phoenix. "We're purely voluntary, and

as such it cannot be a tax."

HELP's PrePass service, which is just becoming commercially operational in California, uses weigh-in-motion (WIM), automatic vehicle classification (AVC) and automatic vehicle identification (AVI) technologies to clear trucks so that they don't need to stop at state weigh stations and ports of entry. UPS trucks participated in the

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federally-supported HELP/Crescent demonstration, which tested the concept and technology before participants moved on to develop a commercial service.

*"We feel we have paid for the infrastructure in our taxes and fees that go to the system already--millions and millions a year."*

The fact that HELP will charge a transaction fee is not recent news to UPS. The carrier does not have a member on HELP's Board of Directors, but it has participated in the HELP program for years and has sent representatives to policy committee meetings, where the topic was discussed, Landis says. "We've never strayed from a tack that [the commercial HELP service] is self-financed, self-supported, user-supported. And we have had no choice on that because there is no public funding available," he says.

"In all the forums and all of the discussions, we have always said that we did not support pay-for-pass," says Sondrup, who dates his company's public opposition to the concept to 1990. HELP recently inaugurated the PrePass service by signing a contract with California, the first state where the service will operate. With the service open for business, the transaction fee official and a registration form arriving in the mail, "we needed to make a statement," Sondrup says. UPS issued a press release on April 5 to announce that while it continues to put great faith in ITS, it "will no longer participate in the activities of HELP, Inc."

Officials at HELP first learned of UPS decision when they received the release, Landis says. HELP immediately issued a release of its own. In addition, Landis sent Sondrup a letter expressing disappointment that UPS

would not participate and debating the carrier's contention that the PrePass fee is a tax.

The view at HELP is that the transaction fee can't be a tax because it is strictly voluntary. Landis calls it a charge that carriers may pay to obtain premium service, allowing their trucks to be cleared on the road instead of pulling into state facilities. "It is no different than the price UPS pays for other private sector products and services," his letter says. The fee is a means of supporting the new service without raising taxes or diverting money from the federal highway trust fund, which is needed to maintain existing infrastructure, says HELP's press release.

UPS, on the other hand, contends that since the firm has helped pay to develop the HELP system, it should be able to enjoy the fruits of this development without further charge. "We feel we have paid for the infrastructure in our taxes and fees that go to the system already--millions and millions a year," Sondrup says. The HELP/Crescent demonstration received funding from the Federal Highway Administration (FHWA) and from participating states. The not-for-profit corporation still receives dues from member states, as well as other members such as industry associations. If tax dollars are used

to improve a system, but a carrier can't participate without incurring a new fee, "there's an opportunity loss for a company like UPS that pays millions a year--or any other large carrier," Sondrup says.

UPS feels it's wrong to allow "the regulatory system" to charge fees via third parties like HELP and its system operator, Lockheed IMS, he says. If a state or the federal government wants to assess a new fee, carriers have formal channels for submitting comments and also can talk with their legislators about the proposal. But an organization like HELP could raise fees without any legislative procedure: "we really don't know how far it could go," Sondrup says. He also asks whether the system is open to other companies that might want to offer similar CVO services in competition with Lockheed.

Walter Keeney, president of two California-based trucking firms--Flour Transport and Food Express--calls the 99 cent PrePass transaction fee "very reasonable" and says charging a fee is "the fairest way to go both for the user and the tax paying general public." Keeney has been involved in the HELP project since 1985 and has equipped 15 of the 72 tractors in the Food Express fleet with AVI transponders for PrePass. These are all linehaul tractors that op-

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erate largely on Interstate 5 in California. As soon as the state equips some of its "cross route" weigh stations, Food Express will equip more trucks.

Although he can't speak for other firms, Keeney says PrePass stands to save his company \$3.75 or more every time one of his trucks bypasses a weigh station. This figure is based on the fact that under the best circumstances, a stop at a scale adds at least 4 1/2 minutes to a trip. Savings could be particularly dramatic on short haul routes like the one between Stockton and Oakland. On that route, the Livermore weigh station involves "a minimum 15 minute stop." For trucks that run the route several times a day, time spent on those stops adds up quickly "Sometimes we can get a fourth haul out of a truck if we didn't have the scale delay time," he says.

UPS certainly doesn't dispute that automated bypass systems are valuable to trucking companies. Its press announcement makes a point of voicing support for electronic clearance

systems and other ITS activities. "UPS actively participates in other clearance systems which do not charge transaction fees," it says.

One of those others was a small test system operated on I-65 in Kentucky several years ago by the Kentucky Transportation Cabinet and the University of Kentucky. The other is the Advantage I-75 operational test, in which UPS is participating "heavily," Sondrup says. Officials with that federally-funded project have told UPS "they don't see that they will need to go to pay-for-pass" even after they make the transition from test to full deployment, he says.

"At this point in time, there are no plans to have a user fee," says Don Hartman, project manager for Advantage I-75 at the Kentucky Transportation Center at the University of Kentucky. "I think there's a general feeling that for the basic regulatory function that a weigh station performs, it doesn't make much sense to institute some type of surtax." But if a system pro-

vides a value-added service, such as allowing carriers to notify drivers to call their dispatchers, that service might carry a fee.

*"It is no different than the price UPS pays for other private sector products and services."*

Hartman notes, however, that since the project's official two year operational test phase doesn't begin until this fall, the day when officials have to make a firm decision on user fees still is a long way off. The question of who should pay for the system depends on who benefits from it—state regulators, carriers, or both. And the facts about benefits and costs still need to be established, he says.

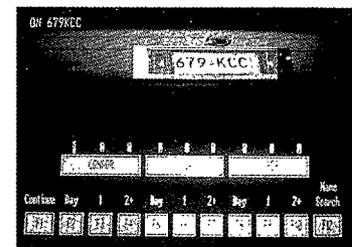
Losing UPS as a customer is not a major blow to HELP, Landis says. "There really isn't anything to sever. We have **not** solicited them for busi-

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ness," he says. HELP has commitments "from a significant number of carriers" for service in California but has not yet actually started operating the PrePass service or collecting fees, he says.

## Ford to Offer...

Continued from page 1.

head console. One displays a tow truck icon, signifying roadside assistance; the other displays an ambulance icon, signifying emergency assistance. As long as the vehicle is in an area with cellular coverage, the system automatically transmits data, including the vehicle's identification number and location, to the Westinghouse Emergency Response Center in Irving, Texas. After sending the data, it also establishes a voice connection to the center.

"We are working on aftermarket versions of the product."

The system takes over the Continental's cellular phone and audio system, even if these components aren't switched on, says Della DiPietro, automotive components communications manager at Ford. While the system places the call, a display on the car's instrument panel carries messages informing the user of the call's progress—for example, explaining that the system is re-placing the call if it can't obtain a cellular channel on the first try.

At the Westinghouse center, an operator at a computer console views data about the vehicle and driver, along with a map showing the vehicle's location. The operator talks with the driver if possible, and relays the call to the appropriate response agency. The system at the Emergency Response Cen-

ter includes base map data and access numbers for police, medical and fire emergency responders throughout the continental United States, says Daniel Dickerson, manager of mobile communications services at the Westinghouse Communications Systems Division in Baltimore. "If you're in the remotest part of Utah and push the button, our screen comes up, shows the plot and shows exactly who to call for police, fire and medical emergencies," assuming cellular coverage is available, he says.

Calls for roadside assistance will be relayed to the U.S. Auto Club, a Ford subsidiary. Ford is offering the roadside service free of charge during the Continental's four year warranty period. After that period, customers can opt for an extended warranty. Ford and Westinghouse have not yet determined what they will offer to customers who decide not to extend their warranties, DiPietro says.

Ford won't name a price for the product until it announces pricing for its 1996 models, DiPietro says. Neither has the company determined how RESCU will be bundled as part of a safety and security options package. The RESCU portion of the package, however, probably won't be more "than the cost of a moon roof"—about \$700, she says. The price does not include the cellular phone.

Ford also has not decided yet whether it will offer the product, or one like it, on other models. "We're looking at it very seriously. Of course, it will be dependent on the market response to the first application," DiPietro says.

Market response will also help determine whether the system finds its way only onto luxury cars like the Continental or eventually appears at the lower end of Ford's product line. "If the response is such that it helps to force the cost of the technology down, then it becomes of wider interest to all segments of the market," DiPietro says. In addition, response to RESCU will

help determine whether Ford begins offering other products based on GPS, such as navigation systems, she says.

Whatever Ford determines, officials at Westinghouse and Motorola seem certain that products similar to the Lincoln RESCU will be installed in

"Once you've got a wireless connection with both voice and data into the automobile, you can envision a lot of possibilities."

into other vehicles, through additional deals with auto manufacturers or through the aftermarket. "We are working on aftermarket versions of the product," Dickerson says. "And that's not necessarily only with the Motorola format."

Motorola's aftermarket product, which it introduced last year, "is in pilot production as we speak," says Robert Denaro, position and navigation systems business director at Motorola. "Westinghouse is very interested" in acting as a service provider for the product, but more than one organization could fill that role, and it's "hard to say" whether Westinghouse will be the first provider when the product goes on sale, he says.

Different service providers could develop in different areas, "and maybe it will be different personalities of service in different areas," Denaro says. This could mean, for example, that some providers will offer only emergency service, and some will offer only roadside assistance. In addition, others might use the platform to provide navigation assistance or help in finding points of interest.

"Once you've got a wireless connection with both voice and data into the automobile, you can envision a lot of possibilities," Denaro says. Although Motorola has a good many ideas, "we're not going to pre-judge what the

customer is going to vote for with his pocketbook," he says.

In addition to Ford, Motorola's unit has found "a tremendous amount of interest" from many automotive original equipment manufacturers (OEMs), Denaro says. Auto companies say that "the interest from their customers is extremely high." In fact, "I think they're finding as much as a tenfold higher interest" in emergency notification systems than in onboard navigation systems, he says, adding that the difference has partly to do with the fact that emergency systems will cost much less than navigation systems.

The Westinghouse Emergency Response Center is a **new unit** within the company's Security Systems Center, which has been serving residential security customers since 1990. Westinghouse has added two dedicated workstations for the Ford service and is staffing them with operators who are "trained to operate in the mobile environment," Dickerson says. As the market for the mobile service grows, Westinghouse envisions upgrading all the work stations in the center to handle the mobile monitoring as well as the home security systems, he says.

Westinghouse plans to use map data from a variety of vendors to assemble a digital base map covering the lower 48 states, Dickerson says. The company will soon add maps for Canada, probably focusing only on the more populated southern half of the country. "I can foresee in the not too distant future we could add Mexico as well," he says.

Westinghouse isn't prepared yet to say what it would charge for emergency response service in connection with an aftermarket product, says Maria Trintis, a company spokesperson. The service, however, will "definitely be competitive" with other products offering emergency response, roadside service or stolen vehicle recovery, Dickerson says.

## Atlanta Readies ATMS For Olympic Traffic But Transit May Miss Start

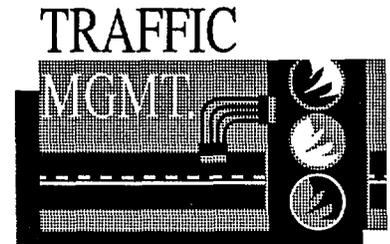
Olympic deadline provides momentum to speed ambitious regional ITS program. Project has grown in size and applications and is a challenge to coordinate. But it may not be multi-modal if transit is slow.

Atlanta is in the fourth year of a five year sprint to prepare for record-breaking traffic during the 1996 Olympic games. Participants say the core elements of its new advanced transportation management system (ATMS) will be up and working as planned, but they are cautious about saying whether transit information will be part of that system.

The ATMS is the first, biggest, most important and most expensive ITS-related project to enter the Olympic course. It received seed funding of \$58 million in 1991 through the Intermodal Surface Transportation Efficiency Act (ISTEA). Since then it has received almost \$54 million more in Congestion Mitigation Air Quality (CMAQ) funds and \$4 million for a project implementing electronic traveler information kiosks. With matching contributions, the total funding is now approximately \$137 million.

"It will be ready," says Marion Waters, state traffic operations engineer at the Georgia Department of Transportation (GDOT). Elements will be brought into the ATMS right up until the last deadline, but these are add-ons, he says. "What we intended to build several years ago is all under construction" (see **Inside IVHS**, Dec. 7, 1992).

The scope of the project has grown considerably. It has expanded into a region-wide system that will include



transportation control centers in five counties surrounding Atlanta. The number of instrumented freeway miles has increased from 10 to 60; the number of changeable message signs has increased from 17 to 41. Plans call for a transportation management center to be constructed in time for September occupancy. Eight hundred traffic signals will be upgraded; hundreds of video cameras and 10-12 highway advisory radio (HAR) systems will be in use on the freeways; an automated traffic advisory telephone system (TATS) and an electronic bulletin board will be available, as will 200 traveler information kiosks, according to Waters and a GDOT fact sheet. The data-rich ATMS also will serve as the basis for other ITS projects in the Atlanta area (see sidebar on page 6).

The games begin on July 20. Integration and testing of the ATMS will be performed as its components are being connected, beginning around January of next year, says Martin Knopp, traffic manager at the Georgia division of the Federal Highway Administration (FHWA). While most ITS projects experience delays, in many cases the only repercussion is having to reschedule the ribbon cutting ceremony. But the Olympics and the traffic it brings won't wait in line for a variable message sign to become **functional**.

"It's kind of scary," says Knopp. There was not enough time to develop a turnkey package. "We've got 11 construction contractors that are building pieces of this thing. And just as many consultant firms that are working pieces, and even more agencies." Coordinating the turf side of the project

## Atlanta ATMS Generates Decathlon of ITS Services

The data collected in Atlanta's transportation management center as part of the region's advanced transportation management system (ATMS) will feed numerous ITS applications that will be demonstrated during the summer Olympics in 1996. The most recent ITS entry in the race against the Olympic gun is the U.S. Department of Transportation's (DOT) Traveler Information Showcase (see *Inside IVHS*, Dec. 19, 1994). The DOT received 49 responses to a request for information (RFI) it issued late last year to gauge interest in demonstrating traveler information technologies during the games. Since then it has received "numerous calls trying to inquire and participate in the project," says Felton Rutledge, the Federal Highway Administration (FHWA) project manager in Atlanta.

Battelle, based in Columbus, Ohio, conducted a feasibility study to see if the showcase could be pulled off, and the federal government decided to give it a green light and approximately \$13 million. Late last month Battelle became the prime contractor on the showcase.

"We really want to show ITS technologies and what they can do for a stressed environment," says Jerry Pittenger, the Battelle project manager. By "stressed" he is referring to the huge crowds of people who will want to clear traffic hurdles during the games. The premise of the showcase is that ITS can help, and that people will notice ITS is helping. There are plans to distribute 500 to 1,000 personal communication devices (PCDs) that will display advanced traveler information. These will be given free of charge to visitors and residents who will be targeted to "provide maximum exposure of the systems," he says.

Other technologies that will be used are in-vehicle navigation devices, online computer information services, interactive television systems, and cable TV. The project will provide the interface and the information gratis "to anybody that wants to showcase advanced ITS technology," Pittenger says. Right now, Battelle is getting independent service providers (ISPs) under contract.

It is premature to announce who will take part in the showcase, Pittenger says. He does say that not many in-vehicle vendors responded to the RFI, and chances are that any in-vehicle system involved will use technology from Zexel USA. He also observes that PCDs involve technology that is still emerging, and they will require some development work to allow them to interface with the showcase's fixed-end server.

The system for the showcase should be in place at the beginning of next year and go through a five month test before running from June 1 to Sept. 20. Vendors with applicable technologies still have time to apply to participate, Pittenger says.

The Atlanta Driver Advisory System, picked for \$6 million in funding last spring under the DOT's ITS operational test program, will also tap into the ATMS data. The test system will add information on traveler services, transit and Olympic events, and will transmit messages (see *Inside IVHS*, Dec. 19, 1994). This information will be communicated to onboard devices in vehicles via both a 220 MHz radio network and an FM subcarrier system. Global positioning system (GPS) receivers will be integrated into the system, and the test will have a Mayday component. Equipped cars will also serve as traffic probes. The grant agreement for the project was executed late last month, says Dick Goldsworthy, the program manager for Scientific-Atlanta, the team leader. So far, the project is on schedule to begin operating in January, 1996 and run for one year.

and trying to speed decisions through bureaucracies have been the toughest challenges, he says.

"It's kind of like preparing Grandma's meals for Thanksgiving," says Waters. "You've got a pie in the oven and you've got the dressing over here, and the turkey takes six hours to bake, while the dressing only takes an hour to bake. The goal is to get it all on the table at the same time and to have it all hot."

*"We have managed to cram what I consider to be about 10 years of work into about four."*

It's a lot to coordinate. "Our problem is the synchronization of information such that if you were dialing in on a cellular phone, listening to an HAR, driving underneath a changeable message sign—all three of those should have the same message," says Robert Franklin, the project manager for San Diego-based TRW, the ATMS program manager. "Our job is to integrate all of this and bring it together." Commercial off-the-shelf software is being used so that GDOT will be self-sufficient at the completion of the project. The software gives standardization and ease of maintenance and can be easily expanded after TRW leaves the project, he says.

The GDOT design section has been working six days a week for almost a year, and most workers won't take any vacation until after the Olympics, says Waters. That's the downside of the Olympic deadline. The upside is that because of the Olympics, the project has received a lot of money, and the deadline has forced staff to outstrip normal productivity "We have managed to cram what I consider to be about 10 years of work into about four,"

Waters says.

Even with all the overtime hours, one part of that Thanksgiving dinner

might not make it to the table. A database created by the Metropolitan Atlanta Rapid Transit Authority (MARTA) ideally would be part of the ATMS. Data from MARTA's transportation information center (TIC) would fit into the ATMS like data from one of the regional transportation control centers (TCCs), says Knopp.

"The goal is to get it all on the table at the same time and to have it all hot."

Most people **Inside** ITS contacted could not speak confidently about MARTA's ability to get its ITS system on line and connected to the ATMS and suggested that we talk to MARTA. But MARTA isn't talking.

Early last year MARTA issued a request for proposals (RFP) that outlined a long list of technologies it would like to implement. After receiving initial bids from vendors, it said it was refining its requirements. Interviewed about the procurement late last year, Harriet Robins Smith, a transportation planner at the authority, would say only that MARTA intended to interface with the other ITS systems in the greater Atlanta area to create a "multi-modal transportation information system." (see **Inside IVHS**, Dec. 19, 1994).

Since then, MARTA has continually put off any elaboration of its plans. Asked late last month if it was behind schedule, Smith said, perhaps half-jokingly, "About three years." Asked if MARTA will have something up and running for the Olympics, she said, "We have a vision that we will."

MARTA did not return phone calls before this issue went to press but other sources working on Atlanta projects say TRW has been selected as its prime contractor—which means the firm will be a partner on all of the ITS initiatives in the Atlanta region. The MARTA project involves developing a traveler information system. It will put

Automatic Vehicle Location (AVL) technology on one fourth of MARTA's 800 buses for real time location data; it will also utilize Americans with Disabili-

ties Act (ADA)-compliant signs to provide voice information on bus arrivals at some stops. When it is integrated with the larger system, people who

## Games Experience for ITS Effort in Atlanta

Atlanta has not seen anything like the traffic challenges the 1996 summer Olympics will bring. But Ed Rowe has. As assistant general manager of the Los Angeles Department of Transportation (LADOT), Rowe was responsible for the overall design and direction of the city's portion of the transportation program for the 1984 summer Olympics. After retiring from LADOT in 1993, he became a technical advisor to the Federal Highway Administration (FHWA) for the advanced transportation management system (ATMS) project in Atlanta.

"The Olympics are like a war," Rowe says. There is the planned part, and then there is the unexpected.

Though technology wasn't as sophisticated 11 years ago, Los Angeles benefited from technology already put in place by the California Department of Transportation (Caltrans), which was the world leader in designing and implementing freeway advanced traffic management systems, Rowe says. Atlanta, by comparison, began a few years ago from square one. On the other hand, there was a hectic race to implement a surface street traffic management system for L.A., the crew working on that literally lived at the control center. The system came on line only a couple of weeks before the games began.

The system provided the ability to identify rapidly changing traffic patterns and to adjust traffic signal timing patterns accordingly. It was a tool that the city did not have previously and it turned out to be "tremendously powerful," Rowe says. Some old-timers in the department were initially skeptical about it, but "I think we demonstrated it once and for all in the '84 Olympics, the value of the tool," he says.

There were a few video cameras on the freeway in California in 1984, but none on the city streets. Imaging technology resided in the eyesight of traffic spotters in helicopters who radioed suggestions back to control centers. The surveillance technologies and other advances in the system Atlanta is building will make it the most sophisticated system in the world, Rowe says.

Atlanta also benefits from the availability of advanced electronic traveler information. Eleven years ago, after radio traffic reports, the next available tool was pretty low tech—press conferences. But "we stressed providing accurate and credible information and advice, and I think the public took it that way," Rowe says.

The unexpected occurred on the last day of the games when a helicopter went down on a critical portion of the freeway. Other than that, traffic in L.A. actually improved during the 16 days of the games—of course, some might say it couldn't have gotten worse. "People did change their transportation habits rather drastically," Rowe says. They staggered their work hours and traveled in temporary car pools. Trucks made pre-deliveries before the Olympics and essential deliveries at night. Roadway construction and maintenance was curtailed.

At the last transportation press conference, Mayor Tom Bradley quipped, "The games are over. Let the traffic begin!" And it did, Rowe says.

access an ATMS information outlet will be able to obtain transit information along with real time traffic information.

The MARTA tie-in is important and worthwhile even if it misses the start of the games, says Waters. "It needs to be done, it will be done. But whether or not it will be on line for the Olympics, I don't know," he says.

## Grass-Roots Issues Find Light of Day At Texas Workshop

Participants in architecture forum upbeat about the give-and-take. Careful preparation focused discussion on issues of importance to local transportation stakeholders. Texas model of participation might be copied elsewhere-but is time running out?

In a workshop held late last month in the Richardson, Texas Civic Center, two panels sat side by side talking with one another and with the audience about the national ITS architecture. One panel was composed of representatives from the federal effort to develop a nationwide architecture. The other was made up of state and local transportation professionals. The audience consisted of over 50 interested stakeholders. By all accounts, the dialogue was productive.

"It was good to have people working on solutions and people that own the problems on an even playing field. That's a new way of doing things," says Jerry Werner, a consultant based in Austin, Texas who was a co-moderator of the workshop.

Last year, the Federal Highway Administration (FHWA) and ITS America sponsored two rounds of

Denis Symes, director of application programs at the Federal Transit Administration (FTA) sees a silver lining in the cloud over MARTA. "Even if the project were to die," he says, "it would be a success because a year ago MARTA and Georgia DOT never interfaced." Before the current effort, the two organizations were "in the same city but on different planets," he says.



public consensus building forums (see *Inside IVHS*, Dec. 5, 1994.) The bulk of those forums consisted of presentations by the four teams which at the time were competing to develop a national ITS architecture. Some questions were taken from the audience, but the selection of the questioners was random, the questioners for the most part stood up and sat down in anonymity, and there was little opportunity for follow-up.

For the Richardson meeting, panel members and a detailed list of concerns were drawn from three preparatory forums about ITS architecture that ITS Texas held in February. To encourage maximum participation, the forums were held in three different cities-San Antonio, Houston and Dallas. Also, two of the forums were co-sponsored by and held in conjunction with local chapter meetings of the Institute of Transportation Engineers (ITE). Two participants from each forum were asked to sit on the workshop panel.

Issues that came up were consolidated and summarized by: Herman Haenel, a Dallas-based consultant and chair of the ITS Texas outreach task force; Al Kosik, a Texas Department of

Transportation (TxDOT) traffic management engineer and co-moderator of the workshop; and Werner. The federal team received the summary before the Richardson workshop. Also in a departure from last year, the local organizations ITS Texas and Texas ITE sponsored the workshop and issued the invitation to the federal team.

*"Their preparation was outstanding."*

"Their preparation was outstanding," says George Beronio, outreach coordinator at the U.S. Department of Transportation (DOT) ITS Joint Program Office (JPO), and a member of the federal panel. Other participants on that panel came from: the DOT; the two remaining architecture teams, led by Loral Corp. and Rockwell International; and ITS America.

At the beginning of the workshop Richard Barber, program manager at Rockwell, gave a brief status report on the architecture development effort tailored to the concerns of the participants. The rest of the day was devoted to discussion between the two panels and questions from the audience. Comparing it to the forums held last year, Beronio says the workshop was "more responsive to the needs of the people actually there." There was more conversation, less presentation, he says. Barber agrees: "It was good in the sense that it was really the first time we really got an interactive discussion going with stakeholders."

"There was a very good open dialogue between both of those [panels] and also a good open dialogue between the audience," says Walter Ragsdale, traffic engineer for the city of Richardson, Texas, and a member of the local user panel. The owners and operators of city systems, streets and local information had the opportunity to present issues that were important

to them, he says.

Ragsdale brought up the necessity to reduce tort liability—"something everybody in the public sector is real concerned about" as more automation is introduced into traffic operations. Since Richardson has already made a large investment in advanced technology and is currently spending \$1.5 million to upgrade its signal system, he also wants to make sure that any new technology works with what is already on the streets. "We want to make sure that we've got some backward compatibility and flexibility to move into some of these new systems," he says. Another critical issue in a time when Texas municipalities are cutting back work forces is the cost for operations and maintenance, he says.

The idea of a "congestion prediction model" provoked considerable discussion, according to several participants. Such a model might be used to divert traffic from freeways to city and arterial streets—and that's something the people who control city streets want to have a say in. The proliferation of electronic maps and routing products that could steer more traffic onto residential streets is related to this. There are a number of ways policy makers can discourage traffic on residential streets, but that "opens up a whole new box of institutional issues," Beronio says. It is too early to see how issues like these "separate out into national architecture issues versus ITS issues versus life in the information age issues," he says.

Though the architecture effort is often presented as operating on a higher level than the issue of standards, the local participants were quite interested in down-to-earth details. "Standards is what makes the architecture real to the stakeholders," says Werner. Attendees at the preparatory forum in Houston developed a prioritized list of necessary standards. There is an immediate need for protocol standards for transportation management centers (TMCs), camera controllers and

changeable message signs; in the area of vehicle-to-roadside communications, "the needs must be defined before standards are developed," according to the issues summary

"This has to accelerate, not just be a one-shot deal."

After the workshop, Rockwell sent ITS Texas a list of questions on which it would like further input. Though some who saw the questions felt they were overly broad, others expressed satisfaction that at least this time around they were being asked to participate.

"The workshop went well and as a result of it, we feel enthusiastic about continuing on and providing additional information as requested by the teams," says Haenel. What level of standards requirements should be defined and what the priority of standards development should be are two of the questions Rockwell is asking. There is a plan to hold another joint ITS Texas/Texas ITE forum in May specifically to address these issues.

Beronio says organizations in at least five other areas of the country are proposing workshops modeled after the one in Texas, and the FHWA has been encouraging them to plan meetings for the summer. The national architecture effort will be able to "synthesize input up until September," after which the effort will come to closure rapidly, he says. The teams are charged with producing a unified national architecture by mid-1996.

Werner says he is encouraged by the support of the FHWA and the architecture teams, but he is concerned that looming deadlines might cut off the "absolutely necessary stakeholder dialogue" that just got started. "My concern is that we have to keep up this process. This has to accelerate, not just be a one-shot deal." He says he would

like the process to expand to include stakeholders in one region of the country talking to their counterparts in another region.

## ITS Industry Seeks More Solid Estimates Of Benefits and Costs

Industry seeks to improve on cost/benefit estimates developed in 1990. Data starting to roll in from operational tests and first deployments, but much interpretation needs to be done before drawing general conclusions. ITS America committee to examine methodologies, work toward new estimates.

Proponents call it a set of new tools for increasing mobility, safety and air quality and stimulating the economy. Detractors call it a collection of pork barrel projects and high tech toys for the elite. Without hard statistics, it's difficult to say exactly what ITS is worth. What do citizens get in exchange for tax dollars spent on transportation technologies? Do ITS products deliver enough value to create viable markets for the private sector?

"More and more often we're being asked, 'Where are the numbers?' And the truth is, there really aren't very many," Donald Ome, senior vice president at Farradyne Systems in Detroit, told the Coordinating Council of ITS America at a meeting in Washington last month.

In the few years that ITS has been a real industry, proponents making their case in Congress, City Hall and the corporate board room have relied on figures developed in 1990—"the best estimates of a group of fairly knowledgeable people" who participated in ITS America's predecessor, Mobility 2000, Ome says. Since then, dozens of ITS operational tests have gotten underway in the US. alone, with further activities in Canada. In

Europe, the DRIVE II program of ITS field tests--funded largely by the European Commission (EC)-wrapped up last year. With a wealth of statistics starting to emerge, the time has come to 'begin refining our estimates,' says Ome, who heads ITS America's Committee on Benefits, Evaluation and Costs (BEC).

Developing new figures on benefits is important not only to sell governments and industry on ITS, but also

to determine which ITS services really do pay off--in both financial and social terms--and which don't merit investment. Also, ITS proponents need credible statistics in order to "keep the program sold" as current elected officials give way to new ones, Ome says. This is especially true when trying to maintain support for projects like the automated highway system, which require many years to come to fruition, he says.

Much of the work to determine ITS benefits in the U.S. is linked to the operational tests funded by the U.S. Department of Transportation (DOT) in conjunction with state, local and private partners. The DOT requires that each of these projects include an independent evaluation. Unfortunately, many projects are taking longer than anticipated to get off the ground, and only a handful have been completed.

## Anatomy of a . . . . .Statistic

hear TRW chairman Joseph Gormancitthisstatisticinhis

keynote address at ITS America's annual meeting last month, you've probably heard or seen it someplace else: at intersections equipped with the SCATS adaptive traffic signal control system as part of the Fast-trac project in Oakland County, Mich., left turn accidents have dropped by 89 percent.

Even James Barbaresso, Fast-trac program director at the Road Commission for Oakland County (RCOC), says he's surprised at how widely this figure has been cited--and he's the one who did the study that generated it. Barbaresso used accident reports provided by the Troy, Mich. police department to analyze accidents at nine intersections in Troy that have been equipped with the SCATS system. From October 1993 to May 1994--before SCATS was installed--a total of 27 left turn accidents occurred at the intersections. From October 1993 to May 1994--after installation--the total was three.

"The reason for the drop was primarily because, along with our SCATS system, we put in protected only left turn phasing"--green arrows allowing vehicles to turn left while oncoming traffic must wait. "We would not have done that had we not had adaptive signaling," Barbaresso says.

Left turn arrows aren't part of the SCATS system per se. But Oakland County couldn't have installed them--and won the safety advantages they provide--if it hadn't also installed a system that adjusts signal cycles according to traffic volumes, Barbaresso says. Adding a left turn-only phase means making the entire signal cycle longer. If traffic managers had tried that at busy intersections with a fixed-time signal system, "we would probably have created a gridlock situation," he says.

The RCOC included the 89 percent figure in a press release published in January. Since developing that figure, Barbaresso has conducted further analysis, based on longer experience with the system. The new statistics are in line with the percentages in the earlier study, he says.

Ultimately, independent evaluators from the University of Michigan--not the RCOC--will perform the analysis that shows what benefits the Fast-trac system does and does not provide. "But I think there's a need to get some early results out there, and this was so striking that we really wanted to share it with people," Barbaresso says. Local officials and citizens want Fast-trac officials to show them how the system is affecting congestion, "and we couldn't wait for two or three years down the road to do that."

*"More and more often we're being asked, 'Where are the numbers?' And the truth is, there really aren't very many."*

One of the best known of the completed tests--TravTek, in Orlando, Fla.--generated so much data that two years after the system stopped operating, all the results still have not been published. "The process has been long and painful," but the results "will provide some numbers, with appropriate caveats, that show what the benefits might be," says Allen Mertig, a member of the technical staff at the Mitre Corp., which works under contract to the Federal Highway Administration (FHWA) on ITS projects. The primary evaluator on TravTek was Science Applications International Corp. (SAIC).

TravTek tested the use of a dynamic route guidance system installed on 100 cars and used in conjunction with an advanced traffic management system (ATMS). Most of the cars were rental vehicles driven for short periods by visitors to the area; about 25 were used for long periods by local drivers. The project also included controlled field experiments. One result derived from the controlled experiments was that drivers using the TravTek system saved as much as five minutes on a 25 minute trip--20 percent--when compared with drivers making the same trip without route guidance. Drivers whose onboard systems provided dy-

dynamic guidance-calculating their routes based on real time traffic conditions-did not appear to save more time than drivers who had route guidance based on static information only. But drivers with the dynamic systems did tend to encounter less congestion, according to a paper on TravTek presented at the ITS World Congress in Paris last year.

*"We are continuing to be fairly successful in collecting nuggets of information on what some individual experiences have been."*

As results like these begin to emerge, they are finding their way into general circulation. But at this very early stage it's difficult to put figures derived from unique applications into a broader context. "We are continuing to be fairly successful in collecting nuggets of information on what some individual experiences have been" in both operational tests and deployments, says Michael Halladay, program assessment specialist at the DOT's ITS Joint Program Office (JPO). DOT officials are "trying to be more categorical, or more formal" in collecting and assembling that type of information, he says. But there hasn't yet been "a real scaling-up effort on a real rigorous basis" to produce a new set of figures on benefits and determine "what it can be nationally," he says.

ITS America has published a fact sheet called "Measured ITS Technology Benefits," which cites figures derived from 10 ITS projects-some operational tests and some implementations. The document doesn't tell how the numbers were developed, nor does it indicate whether a given statistic was obtained part way through a project or as the result of a formal, independent study that has been completed and published (see sidebar on page 10).

And, of course, without further work, it's impossible to tell how statistics derived from different projects might relate to one another. For example, the fact sheet indicates that the adaptive signal control system installed as part of the Fast-trac project in Oakland County Mich. produced a 19 percent increase in vehicle speed during peak travel times, and computerized traffic signals installed in Abilene, Texas produced a 22 percent increase in travel speed. Based on those figures, one might assume that an advanced traffic signal control system generally will improve traffic flow by about 20 percent. But without details on how researchers gathered data and reached their conclusions, it's not clear whether such a generalization makes sense.

Researchers at the Massachusetts Institute of Technology (MIT) began work about two years ago on a project aimed at establishing relationships among data emerging from seven federally-funded ITS operational tests. The goal was to determine how results obtained in a test might apply to transportation problems elsewhere-to "establish some sort of an evaluation framework that would allow us to compare apples to apples," says Thomas Humphrey, region one director, University Transportation Center at the MIT Center for Transportation Studies.

Unfortunately the project fell vic-

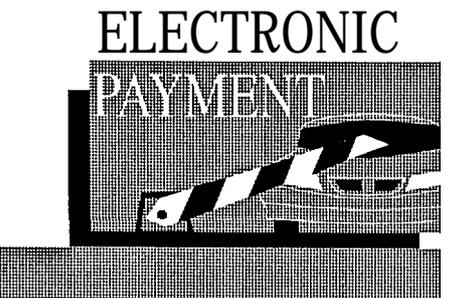
tim to the delays that have plagued many operational tests. When the research period ended, "the various operational test programs were still in the process of trying to put together data," Humphrey says.

Also in pursuit of a more comprehensive approach, ITS America's BEC Committee is planning a meeting in Minneapolis in early September to examine methodologies for deriving statistics on the benefits and costs of ITS, and coming up with some new estimates. One of the people helping to develop the program for that meeting, consultant Walter Albers in West Bloomfield, Mich., will draw in part on ideas discussed at a workshop on methodologies for analyzing societal issues in transportation, to be sponsored by the University of Michigan Transportation Research Institute in May, Orne says (see *Inside IVHS*, April 10, 1995).

At the JPO, Halladay is leading an effort to develop statistics on ITS costs and benefits, in conjunction with ITS participants at the FHWA, the Federal Transit Administration (ETA) and the National Highway Traffic Safety Administration (NHTSA), and with ITS America. This work is aimed at developing the type of information needed to build and maintain support for ITS. It is also connected with an effort to assess the benefits and progress of the federal ITS program itself.

## NYS Thruway Authority Begins Pilot Operation Of Read/Write E-ZPass

New York State Thruway Authority starts operating ETC system with Mark IV equipment on closed portion of its system. Plans to replace interim system with Amtech equipment at barrier plazas this summer.



Start of operations on Verrazano Narrows Bridge could coincide with trial on New Jersey Turnpike. Pennsylvania Turnpike running late.

The "real" E-ZPass toll collection

system saw its debut last week when the New York State Thruway Authority (NYSTA) started operating a pilot system on six interchanges in the Al-

*"We expect that one Monday morning they will discontinue the use of one tag and start the use of the other."*

bany, N.Y. area. E-ZPass is the common name for a group of electronic toll collection (ETC) systems under development by eight toll authorities in New York, New Jersey and Pennsylvania. The agencies-working through a body called the Interagency Group (IAG) to procure a common automatic vehicle identification (AVI) technology-selected equipment from Mark IV IVHS in Mississauga, Ont. just over a year ago (see *Inside IVHS*, March 28, 1994).

NYSTA is the first IAG member to implement the new system. It was also the only member to operate an "interim" E-ZPass system, beginning in August, 1993 (see *Inside IVHS*, Aug. 16, 1993). That system uses read-only AVI equipment from Amtech Corp. in Dallas. The new system from Mark IV is based on read/write technology.

The Thruway Authority installed the Amtech system on six barrier plazas near New York City and Buffalo. The Mark IV equipment will go into plazas on the closed portion of the Thruway, where patrons currently receive tickets as they enter the system and pay a fee as they exit, with the amount based on the distance traveled.

The site of the pilot installation a segment of the Thruway running from Amsterdam, N.Y. to downtown Albany-is "a fairly heavy commuter corridor," says Michael Zimmerman, director of administrative services for NYSTA in Albany. Since it announced the new system earlier this month, the

authority has been receiving "calls at the rate of hundreds a day" from patrons requesting applications to receive ETC tags, he says.

The Thruway is offering two options for using E-ZPass in the Albany area. Under the "Standard Plan," the patron deposits \$10 or more into a pre-paid account, from which the appropriate toll is deducted with each use. Standard Plan customers also pay a \$1 per month service charge. Under the "Commuter Option," a patron pays \$80 per year for unlimited travel within a 30 mile range. This option also covers the first 30 miles of longer trips. Travelers planning to incur tolls outside the 30 mile range must also deposit at least \$10 into a toll account, so the system can deduct the appropriate tolls. All E-ZPass patrons pay a refundable \$10 deposit per tag.

Nearly 100,000 Thruway patrons already have tags for the older system in the New York City and Buffalo areas. NYSTA plans to continue operating that system until "mid-summer," Zimmerman says. Since the Amtech and Mark IV systems are incompatible, these plans could cause problems for some patrons who might try to use E-ZPass tags obtained in one city to drive through E-ZPass lanes in another city. But New York, Albany and Buffalo are far enough apart to keep potential confusion to a minimum.

Assuming all goes well with the pilot implementation, NYSTA plans to swap out the Amtech equipment for Mark IV's this summer and add the read/write system at one more barrier plaza outside New York and two near Buffalo. The logistics for exchanging Mark IV tags for the 100,000 Amtech tags now in the field "are being worked out now," Zimmerman says. "We expect that one Monday morning they will discontinue the use of one tag and start the use of the other." NYSTA expects to expand E-ZPass to cover the entire Thruway over the next several years.

NYSTA is one of four IAG mem-

bers that said a year ago they expected to start operating E-ZPass in 1995. It looks as though the second authority to get the new system running will be MTA Bridges and Tunnels (formerly known as the Triborough Bridge and Tunnel Authority). The MTA currently is installing equipment on the Verrazano Narrows Bridge, shooting to begin operation in "late August," says Frank Pascual, a spokesperson for the authority Unlike NYSTA, which is doing its own systems integration, the MTA has contracted with Mark IV's competitor, Amtech, to integrate its electronic toll collection system (see *Inside IVHS*, Aug. 15, 1994).

The New Jersey Turnpike Authority (NJTA) has stuck with earlier plans to implement E-ZPass on a test system this year, probably in the third quarter, says Lynn Fleegeer, the authority's director of public affairs. Once the NJTA works out all the questions related to operating E-ZPass on a closed toll system, charging tolls based on vehicle classification and catching violators, it will expand the system so that it can be used by all passenger vehicles on the Turnpike, she says.

Originally, NJTA officials had planned to conduct the test by installing equipment at a single plaza, near Secaucus, N.J. More recently, they have decided to perform a limited installation at every entrance and exit on the Turnpike-probably equipping just one multi-use lane at each-and give ETC tags only to commercial buses, Fleegeer says.

The NJTA has not yet signed a contract with Mark IV (something each IAG member must do individually, even though the members conducted a joint procurement). But it would have to sign one in order to purchase equipment for the pilot implementation, Fleegeer says. Things have moved more slowly than expected because, with a change of administration in New Jersey a little over a year ago, the authority received an entirely new set of board members. There have been "a number

of issues they've had to bring themselves up to speed on" before approving a contract for the E-ZPass equipment, she says. The NJTA expects to perform its own system integration.

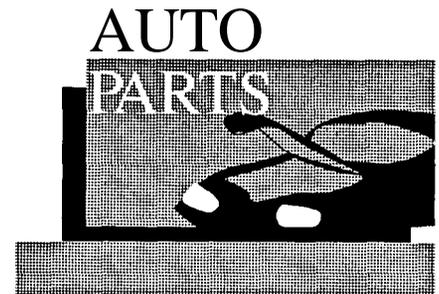
*The MTA currently is installing equipment on the Verrazano Narrows Bridge, shooting to begin operation in "late August."*

The arrival of a new state administration also has slowed the arrival of E-ZPass on the Pennsylvania Turnpike. Officials with the Pennsylvania Turnpike Commission said a year ago that they would implement a pilot system on barrier plazas near Pittsburgh in 1995, to gain some experience before tackling the complexities posed by the closed portion of the Turnpike. Now, with a new Board of Commissioners in place, it looks as though it will be 1996

or 1997 before E-ZPass makes its appearance in Pennsylvania, says Mike Kennedy, deputy executive director at the Pennsylvania Turnpike Commission. The agency is "committed to" the Mark IV technology and to the IAG, but it has not yet agreed to a time frame for implementation, he says. Neither has it conducted its procurement for a systems integrator.

The other four members of the IAG are looking beyond 1995 to start operating their ETC systems. They are: the New Jersey Highway Authority, the Port Authority of New York and New Jersey, the South Jersey Transportation Authority, and the Delaware River Port Authority, which joined the IAG last November (see *Inside IVHS*, Oct. 24, 1994). The South Jersey Transportation Authority, which operates the Atlantic City Expressway, is expected soon to announce its choice of a systems integrator for E-ZPass. The New Jersey Highway Authority which operates the Garden State Parkway, last

year announced that it had dropped plans to implement E-ZPass in the foreseeable future but would remain active in the IAG and might eventually implement the system if it appeared to offer a convenience to its patrons (see *Inside IVHS*, Aug. 1, 1994).



⚡ The U.S. Department of Transportation (DOT) has transmitted to the U.S. Congress proposed legislation to reorganize the department. Among other changes, the proposal would consolidate the DOT's 10 existing modal administrations into three. The administrations that participate in the federal



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ITS program all would become part of a new Intermodal Transportation Administration (ITA-see *Inside IVHS*, Feb. 13, 1995). The DOT hopes to establish the ITA in October of this year. The proposal also calls for adding a sixth assistant secretary position, focused on transportation technology.

ITS America has dropped—at least temporarily—plans to publish its new magazine, **Intelligent Transportation**. The decision was made early in April, says Peter Hause, sales and marketing manager for the magazine at ITS America's Washington, D.C. headquarters. Hause refers further questions about the decision to Pat Wheeler, the organization's director of communications. ITS America is "putting the idea in abeyance for the time being," Wheeler says. "It's a good idea, something that we want to do, but not right now." She declines to give further details, noting that ITS America is "reworking some things" and will have more to say on the matter "probably in a couple of weeks or so."

John Stearns, who recently left

map database vendor Navigation Technologies (NavTech), has been appointed director of Project California, an initiative that aims to make California a world capital for advanced transportation technologies. Project California was launched in 1992 by the California Council on Science and Technology, and it currently involves about 50 organizations. The groups work within nine alliances focused on specific areas; one of these is devoted to ITS, and another to electronic technologies for public transit.

Stearns served as president of NavTech from 1991 until last January (see *Inside IVHS*, Feb. 13, 1995). Before joining NavTech, he served as managing director of strategic planning, research and development and emerging technology at the American Automobile Association.

By 2001, the U.S. market for ITS will reach \$656 million, according to a new study by the market research firm Frost and Sullivan in Mountain View, Calif. The study predicts that advanced vehicle control systems (AVCS) will make up 33 percent of that market,

compared with 7 percent in 1994. Advanced traveler information systems (ATIS) will grow from 2 percent of the market in 1994 to 25 percent in 2001. Systems for commercial vehicle operations (CVO), while growing in absolute terms, will claim only 27 percent of the market, compared with the 62 percent market share they held last year. The Frost and Sullivan report sells for \$2,995.

The Virginia Department of Transportation (VDOT) is conducting tests of automatic vehicle identification (AVI) equipment from Mark IV, to help it determine whether to install that equipment on the Dulles Toll Road. Instead of its original choice, equipment from Combitech Traffic Systems in Joenköping, Sweden (see *Inside IVHS*, March 13, 1995). If the tests go well, "I would assume we would switch," says William Lindsey, head of VDOT's administrative services division. VDOT must pay for the Combitech equipment no matter what, but it has issued a notice suspending further development with the Swedish manufacturer, he says.

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